

WHAT DO WE MEAN BY "CORAL GROWTH?"

ELIZABETH H. GLADFELTER

West Indies Laboratory,
Teague Bay,
Christiansted, St. Croix, USVI 00820

Biologists and geologists who measure "coral growth" use a variety of techniques yielding a series of data sets, not necessarily comparable to one another. An understanding of the fundamental mechanisms of both skeletal development and coral physiology is desirable to interpret one's data correctly.

Skeletal growth can be expressed as increase in length (linear extension) or increase in mass (CaCO_3 accretion or calcification). Recent work suggests that both parameters may vary in a yearly cycle, but factors influencing these parameters may be different. For instance, sunlight hours correlates with changes in accretion (in several recent publications), while linear extension may be influenced by temperature changes or perhaps the nutritive state of the coral.

Tissue growth cannot be inferred from coral skeletal growth. Minimal tissue addition can be estimated from a measurement of linear extension in a branching species. However, to date there is no reliable technique to measure tissue increase in a fixed amount of time. If an investigator desires to understand

the relationship between skeletal development (including changes in both extension and accretion) and the physiological state of the coral, other metabolic expenditures such as gamete production, mucus production, and loss to predators must be considered in addition to tissue growth and maintenance respiration.

How does a coral grow? Future research should result in a better understanding of the complex inter-relationship between the living coral and its CaCO_3 skeleton.